

## PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference TS 6403 PCT	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/EP2005/050589	International filing date (day/month/year) 10.02.2005	Priority date (day/month/year) 12.02.2004	
International Patent Classification (IPC) or national classification and IPC INV. E21B33/138			
Applicant SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 2 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  30.11.2005		Date of completion of this report  18.05.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized officer  Puetz, C  Telephone No. +31 70 340-3759	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2005/050589

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
  - ☐ international search (under Rules 12.3(a) and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4(a))
  - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-15 as originally filed

**Claims, Numbers**

1-7 received on 21.12.2005 with letter of 21.12.2005

**Drawings, Sheets**

1/3-3/3 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☒ the claims, Nos. 8,9
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	2-7
	No: Claims	1
Inventive step (IS)	Yes: Claims	
	No: Claims	1-7
Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

- D1:** US3525398
- D2:** US3302719
- D3:** WO01/74967
- D4:** EP1130215
- D5:** US2002/020529

**1. Novelty and inventive step:**

- 1.1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document **D3** discloses (page 1, lines 1-5; page 12, line 25 - page 13, line 5; claim 1) a method to reduce the loss of circulation fluids into flow passages of a subterranean formation by introducing into the circulation fluid particles of a gel-forming polyacrylamide polymer. The gel-forming polymer is allowed to enter the lost circulation zone, to absorb water and to swell. By absorbing water and swelling, fissures are plugged.

Method claim 1 of the present application refers to e.g. "*.. introducing the well fluid into the wellbore so that an carrier fluid passes through an interface and its surroundings ..*". The means to achieve this are not stated. Furthermore the term "interface" is not clearly defined. It is usual that a well fluid passes from the wellbore to the surroundings. The "interface" is regarded to be the lost circulation zone of **D3**.

Therefore the subject-matter of claim 1 of the present application is not novel.

- 1.2. As to the dependant claims 2-7, they are deemed to refer simply to routine variations of the method disclosed in claim 1, which are within the ordinary skill of a person

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(SEPARATE SHEET)**

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skilled in the art and which do not appear to cause any unexpected effects which might establish an inventive step in the meaning of Article 33(3) PCT. E.g. documents **D4** (claims) and **D5** (claims) disclose sealing compositions comprising hardenable resins (e.g. epoxy resins). **D1** discloses (see e.g. column 1, lines 12-37, figure, claim 1 and 9) a process for sealing a fracture. A particulate, solid resin (thermoplastic resin) in a liquid (preferably water) is used for the sealing. The resin forms a impermeable seal in the fracture. To combine the teachings of **D1** and **D4** or **D5** would appear to be obvious for a person skilled in the art.

C L A I M S

21.12.2005

1. A method for suppressing fluid communication to <sup>(95)</sup> from a wellbore in a subsurface formation, which method comprises:

- providing a well fluid which comprises solid particles in a carrier fluid, which solid particles include a reactive polymer;
- introducing the well fluid into the wellbore so that carrier fluid passes through an interface between the wellbore and its surroundings, wherein said particles are accumulated at the interface; and
- allowing the polymer to form a solid plug suppressing fluid communication through the interface.

2. The method according to claim 1, wherein the interface is formed by one of the group consisting of a perforation in the formation, a fracture in the formation, and a cement irregularity between a metal casing and the formation.

3. The method according to claim 1 or 2, wherein the polymer is a thermosetting polymer composition, for example selected from the group consisting of a phenolic resin composition, a polyester resin composition, an epoxy resin composition, and polyurethane composition.

4. The method according to claim 3, wherein the polymer is an epoxy resin composition comprising an epoxy resin, a curing agent, and optionally an accelerator, catalyst and/or filler material.

5. The method according to any one of claims 1-4, wherein a cooling fluid is introduced into the wellbore prior to introducing the well fluid with reactive polymer particles.

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6. The method according to any one of claims 1-5, wherein a heating fluid is introduced into the wellbore prior to introducing the well fluid with polymer particles.

- 5 7. The method according to any one of claims 1-6, wherein the subsurface formation is subsequently selectively re-perforated.

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